XP131A1715SR

TOREX

ETR1106_001

Power MOSFET

■GENERAL DESCRIPTION

The XP131A1715SR is an N-channel Power MOSFET with low on-state resistance and ultra high-speed switching characteristics.
Because high-speed switching is possible, the IC can be efficiently set thereby saving energy
The small SOP-8 package makes high density mounting possible

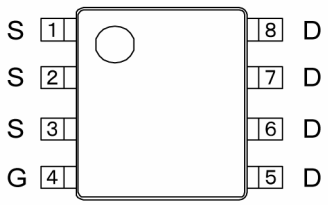
■APPLICATIONS

- ●Notebook PCs
- ●Cellular and portable phones
- ●On-board power supplies
- ●Li-ion battery systems

■FEATURES

Low On-State Resistance : Rds(on)= 0.012Ω(Vgs=4.5V)
: Rds(on)= 0.015Ω(Vgs=2.5V)
: Rds(on)= 0.025Ω(Vgs=1.5V)
Ultra High-Speed Switching
Driving Voltage : 1.5V
N-Channel Power MOSFET
DMOS Structure
Package : SOP-8

■PIN CONFIGURATION

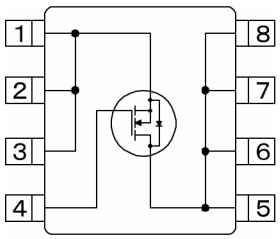


SOP-8
(TOP VIEW)

■PIN ASSIGNMENT

PIN NUMBER	PIN NAME	FUNCTION
1~3	S	Source
4	G	Gate
5~8	D	Drain

■EQUIVALENT CIRCUIT



N-channel MOSFET
(1 device built-in)

■ABSOLUTE MAXIMUM RATINGS

Ta = 25℃

PARAMETER	SYMBOL	RATINGS	UNITS
Drain-Source Voltage	Vdss	20	V
Gate-Source Voltage	Vgss	±8	V
Drain Current (DC)	Id	10	A
Drain Current (Pulse)	Idp	40	A
Reverse Drain Current	Idr	10	A
Channel Power Dissipation *	Pd	2.5	W
Channel Temperature	Tch	150	℃
Storage Temperature Range	Tstg	-55~150	℃

* When implemented on a glass epoxy PCB

■ELECTRICAL CHARACTERISTICS

DC Characteristics

Ta = 25℃

PARAMETER	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS
Drain Cut-Off Current	Idss	Vds=20V, Vgs=0V	-	-	10	μA
Gate-Source Leak Current	Igss	Vgs=±8V, Vds=0V	-	-	±1	μA
Gate-Source Cut-Off Voltage	Vgs(off)	Id=1mA, Vds=10V	0.5	-	1.2	V
Drain-Source On-State Resistance *	Rds(on)	Id=5A, Vgs=4.5V	-	0.009	0.012	Ω
		Id=5A, Vgs=2.5V	-	0.011	0.015	Ω
		Id=1.5A, Vgs=1.5V	-	0.017	0.025	Ω
Forward Transfer Admittance*	| Yfs |	Id=5A, Vds=10V	-	34	-	S
Body Drain Diode Forward Voltage	Vf	If=10A, Vgs=0V	-	0.8	1.1	V

* Effective during pulse test.

Dynamic Characteristics

Ta = 25℃

PARAMETER	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS
Input Capacitance	Ciss	Vds=10V, Vgs=0V f=1MHz	-	2000	-	pF
Output Capacitance	Coss		-	1000	-	pF
Feedback Capacitance	Crss		-	450	-	pF

Switching Characteristics

Ta = 25℃

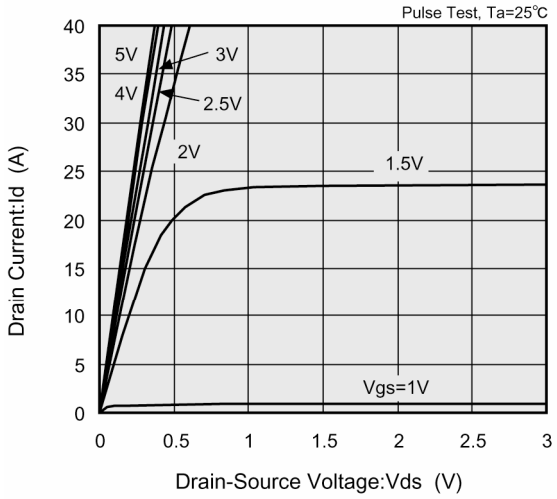
PARAMETER	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS
Turn-On Delay Time	td (on)	Vgs=5V, Id=5A Vdd=10V	-	15	-	ns
Rise Time	tr		-	25	-	ns
Turn-Off Delay Time	td (off)		-	95	-	ns
Fall Time	tf		-	15	-	ns

Thermal Characteristics

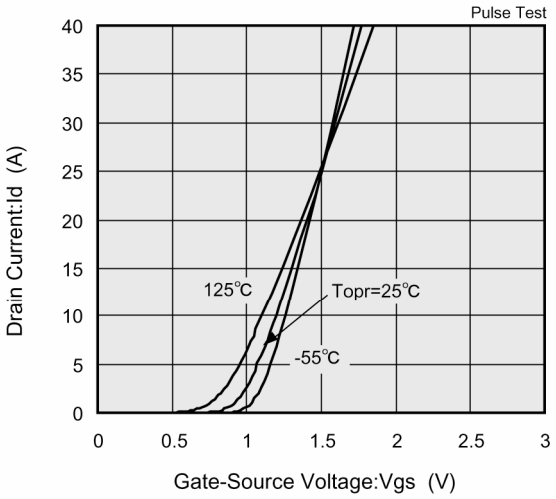
PARAMETER	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS
Thermal Resistance (Channel-Ambience)	Rth (ch-a)	Implement on a glass epoxy resin PCB	-	50	-	℃/W

■TYPICAL PERFORMANCE CHARACTERISTICS

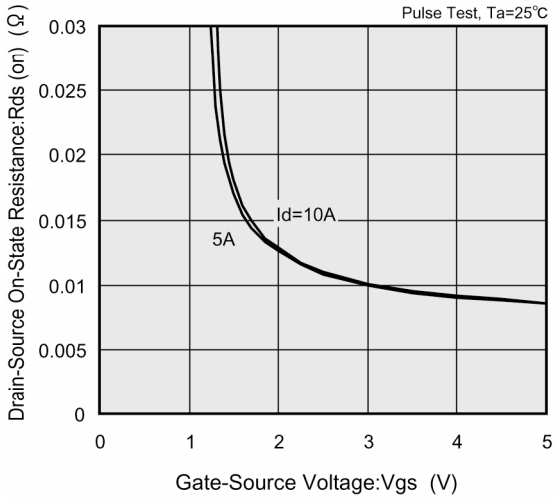
(1) Drain Current vs. Drain-Source Voltage



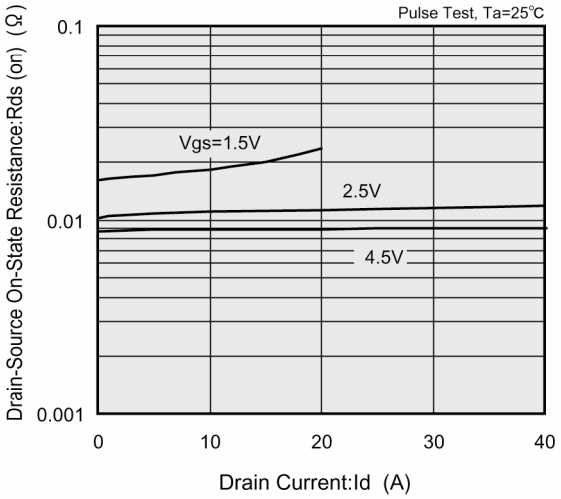
(2) Drain Current vs. Gate-Source Voltage



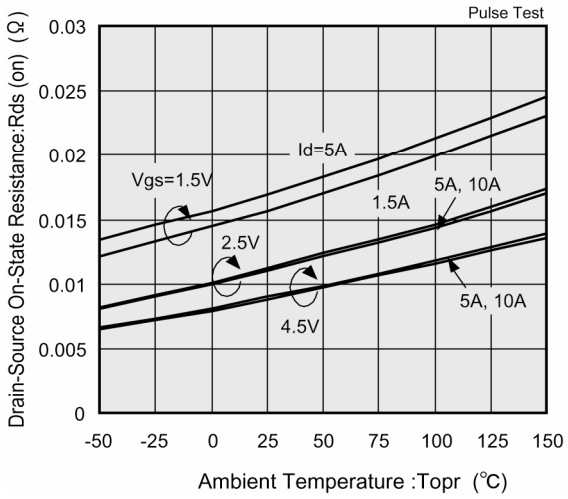
(3) Drain-Source On-State Resistance vs. Gate-Source Voltage



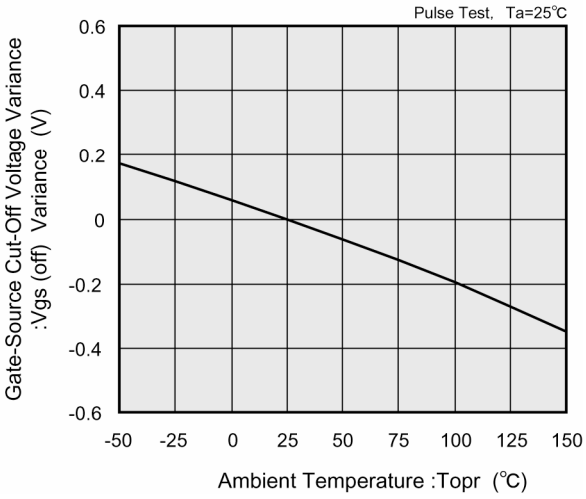
(4) Drain-Source On-State Resistance vs. Drain Current



(5) Drain-Source On-State Resistance vs. Ambient Temperature

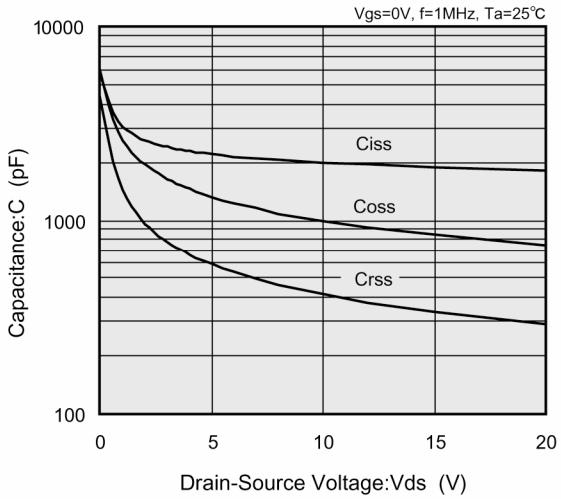


(6) Gate-Source Cut-Off Voltage Variance vs. Ambient Temperature

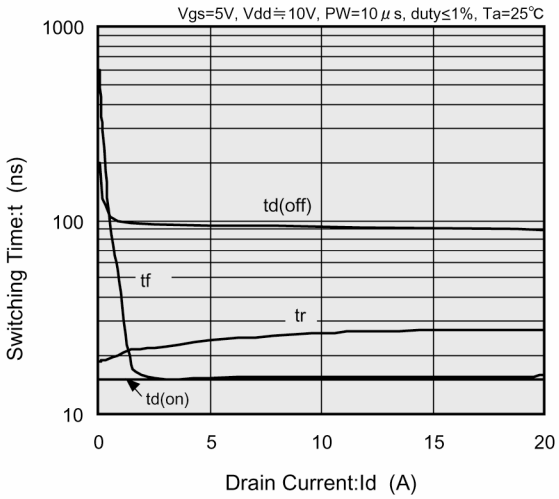


■TYPICAL PERFORMANCE CHARACTERISTICS (Continued)

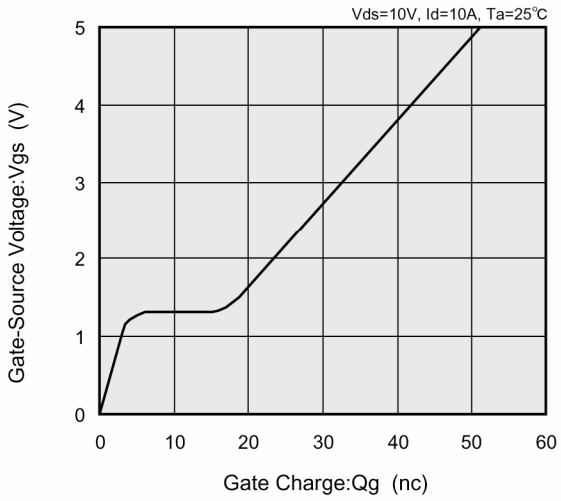
(7) Capacitance vs. Drain-Source Voltage



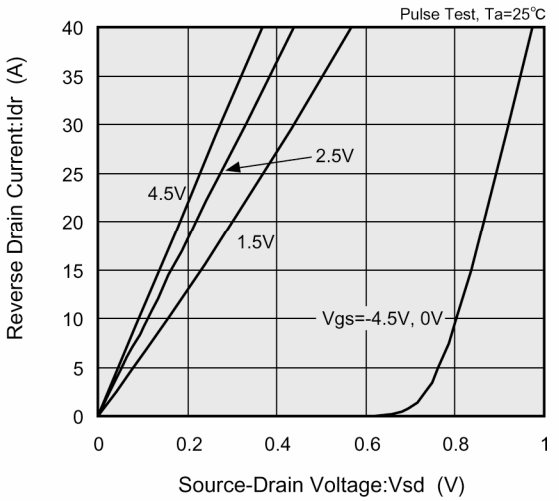
(8) SwitchingTime vs. Drain Current



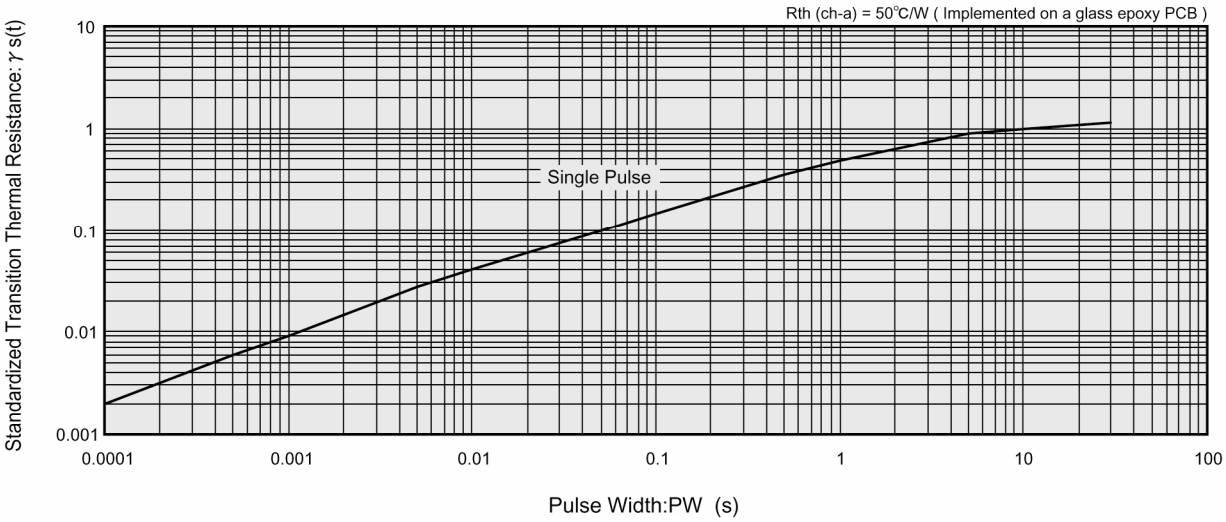
(9) Gate-Source Voltage vs. Gate Charge



(10) Reverse Drain Current vs. Source-Drain Voltage



(11) Standardized transition Thermal Resistance vs. Pulse Width



1. The products and product specifications contained herein are subject to change without notice to improve performance characteristics. Consult us, or our representatives before use, to confirm that the information in this catalog is up to date.
2. We assume no responsibility for any infringement of patents, patent rights, or other rights arising from the use of any information and circuitry in this catalog.
3. Please ensure suitable shipping controls (including fail-safe designs and aging protection) are in force for equipment employing products listed in this catalog.
4. The products in this catalog are not developed, designed, or approved for use with such equipment whose failure of malfunction can be reasonably expected to directly endanger the life of, or cause significant injury to, the user.
   (e.g. Atomic energy; aerospace; transport; combustion and associated safety equipment thereof.)
5. Please use the products listed in this catalog within the specified ranges.
   Should you wish to use the products under conditions exceeding the specifications, please consult us or our representatives.
6. We assume no responsibility for damage or loss due to abnormal use.
7. All rights reserved. No part of this catalog may be copied or reproduced without the prior permission of Torex Semiconductor Ltd.

TOREX SEMICONDUCTOR LTD.